

PATENT SPECIFICATION

DRAWINGS ATTACHED



855,660

Date of Application and filing Complete Specification April 5, 1957.
No. 11219/57.

Application made in France on March 16, 1957.
Complete Specification Published Dec. 7, 1960.

Index at acceptance:—Class 80(2), C1C(1:4B:9).

International Classification:—F06d.

COMPLETE SPECIFICATION

Automatic Clutch

I, HEIMAN PADOVA, of 12, Cavendish Avenue, London, N.W.8, a British subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The subject of the present invention is an automatic clutch mechanism which can be applied to motor vehicles and all industrial purposes, and it is based on the effects of centrifugal force.

The invention consists of an automatic centrifugal clutch comprising a plurality of balls held in an annular chamber around the rotational axis of the clutch, one side of which chamber is formed by part of a driving member and the other side by part of an axially movable member, the axial movement of which frictionally clamps a driven disc against the driving member and both sides of which chamber are inwardly inclined towards each other toward the radially outer part of the chamber in relation to the rotational axis.

Conveniently the annular chamber is formed by a pair of annular cups arranged to slide one inside the other in the direction of the rotational axis of the clutch.

The invention also concerns a clutch which is characterised in that, fitted in the space arranged between the cups is a loose partition member dividing the space into compartments which separates the number of elements contained in the cups, thereby preventing the clutch being thrown into a state of disequilibrium.

The scope of the invention also extends to the characteristics described hereinafter.

The invention will be further described with reference to the accompanying drawings which are presented merely by way of example without implying that the scope of the invention be thus limited:—

Figure 1 is a sectional side view of one form of clutch;

[Price 3s. 6d.]

Figure 2 is a similar view of another form of clutch from the side;

Figure 3 is a detailed view showing, in elevation, the cups and the loose partition member dividing the box into compartments. 50

Figure 4 is a sectional end view of Figure 3;

Figure 5 is a view of the loose member in perspective.

On the existing engine flywheel 1 is fitted a back-plate 3 which receives the thrust of the coned annular cup 4 which thus forms part of the driving member; since the latter is unable to move back it is coned annular cup 5 which, coupled to a presser plate 8, progressively clamps a driven clutch plate 2 against the flywheel 1 giving a smooth and progressive drive to the driven shaft carrying the plate 2. Loose balls 11 are carried in the annular chamber formed by the two cups 4, 5, of which cup 4 slides axially within cup 5 under the axial thrust produced by the centrifugal force on the balls 11 acting on the inwardly inclined sides of both cups 4, 5. 55

Release of the friction plate is effected by two pillars 6 the springs 7 on which bear on backplate 3.

In Figures 2 to 4 a loose dividing member is arranged in the space between the two cups 4 and 5. This is constituted by a ring 9 on whose outer surface are fitted perpendicularly a set of vanes or fins 10. 75

In the example quoted, the vanes are eight in number. Balls 11 contained in the cups are thus distributed evenly in the eight compartments 12 formed by the vanes.

The movable division into compartments is driven by the balls at the same speed as the cups in a manner such as to synchronise their rotations.

In this manner the clutch is kept in equilibrium since the balls moving in their compartments are unable to become displaced and become wedged all on one side under 80

90

the action of the centrifugal force, because they remain in their respective compartments.

It is very obvious that the invention is not limited in its scope of the examples of execution as described and represented above and that, departing from these, it is possible to provide for other variants without it being necessary to depart from the claims.

WHAT I CLAIM IS:—

- 10 1. An automatic centrifugal friction clutch comprising a plurality of balls held in an annular chamber around the rotational axis of the clutch, one side of which chamber is formed by part of a driving member and the other side by part of an axially movable member, the axial movement of which frictionally clamps a driven disc against the driving member and both sides of which chamber are inwardly inclined towards each other toward the radially outer part of the chamber in relation to the rotational axis.
- 15 2. An automatic centrifugal clutch as claimed in Claim 1, in which the annular chamber is formed by a pair of annular cups
- 20 25 arranged to slide one inside the other in the

direction of the rotational axis of the clutch.

3. Automatic clutch as claimed in Claim 1 or 2, characterised in that in the space left between the cups a loose partition member is arranged which divides the material contained in the cups, thereby preventing the clutch being thrown into disequilibrium.

4. Automatic clutch as claimed in Claim 3, characterised in that the loose partition member is constituted by vanes or fins fitted in the periphery of a drum disposed concentrically inside the cups.

5. Automatic clutch as claimed in Claim 3 or 4, characterised in that the loose partition member is freely mounted between the cups in such a way as to be driven synchronously with the elements they enclose.

6. Automatic clutch substantially as described and shown in Figure 1 of the accompanying drawings.

7. Automatic clutch substantially as described and shown in Figure 2 of the accompanying drawings.

30

35

40

45

MARKS & CLERK.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1960.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained

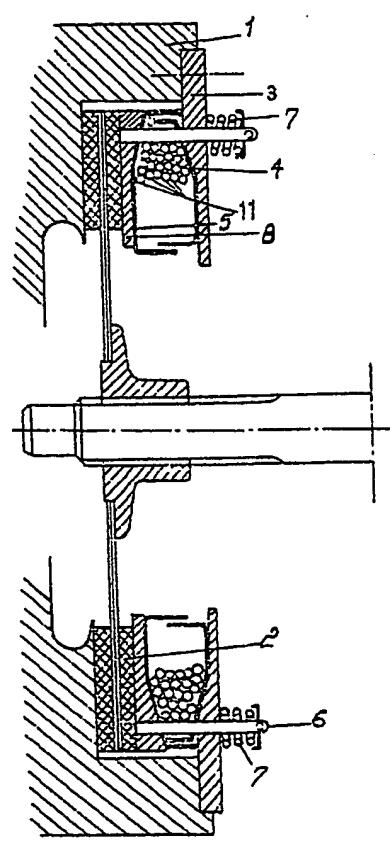


FIG.1

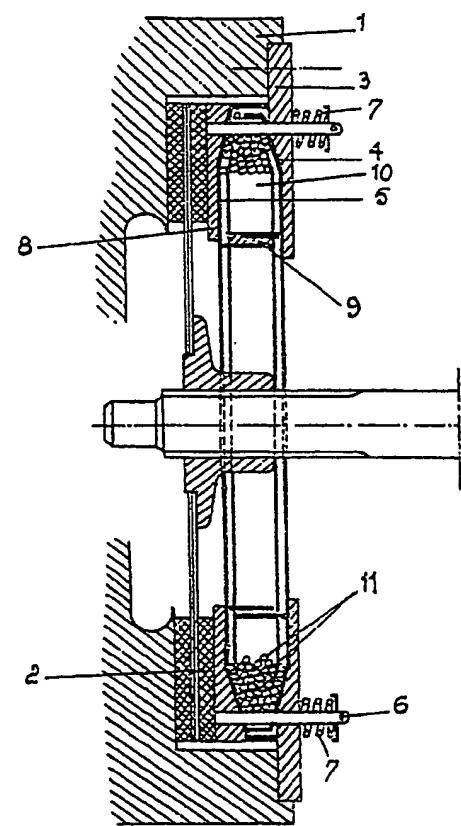


FIG.2

855,660 COMPLETE SPECIFICATION
3 SHEETS
*This drawing is a reproduction of
the Original on a reduced scale.
SHEETS 1,2 & 3*

FIG.5

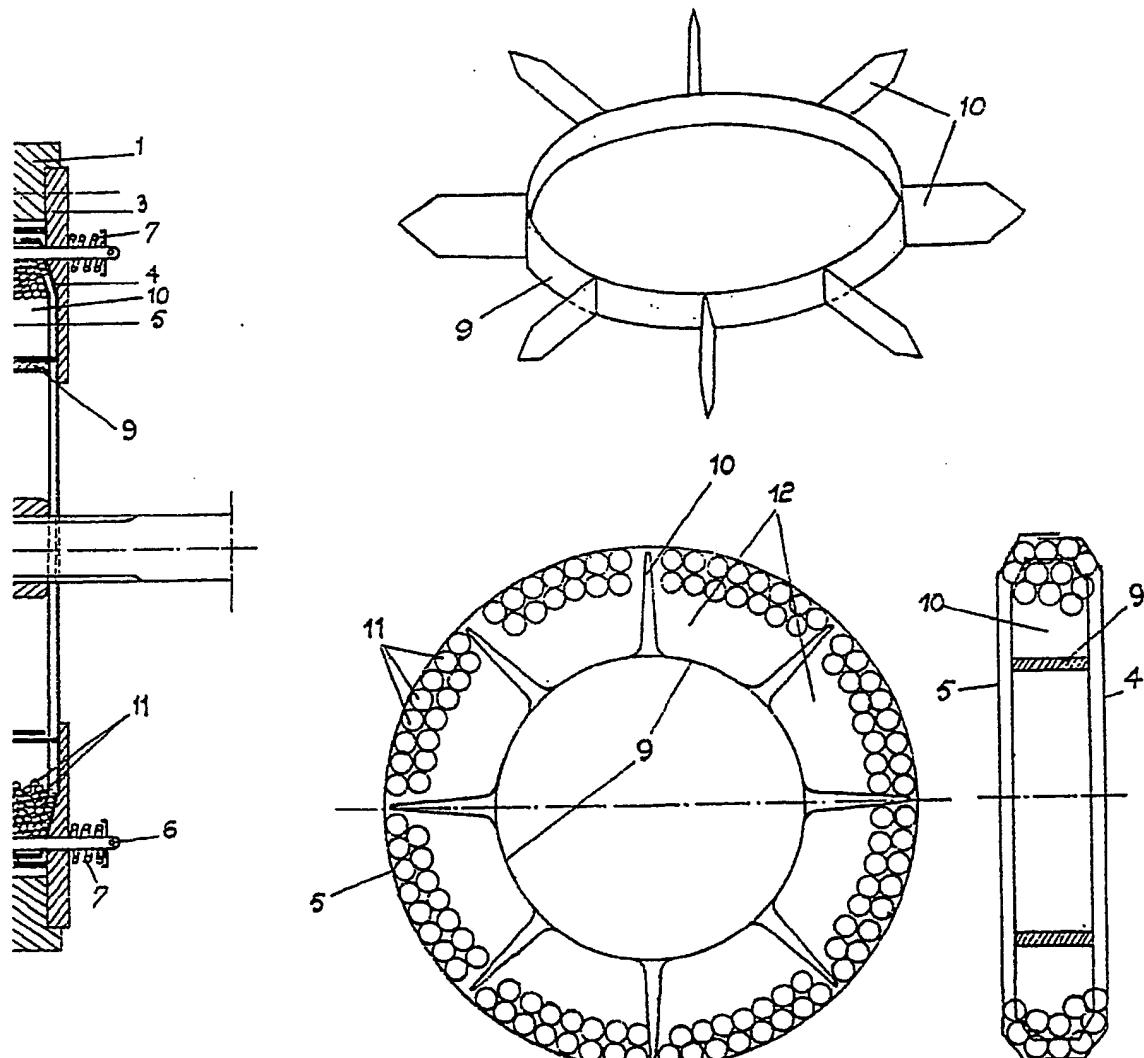


FIG.3

FIG.4

855,660 COMPLETE SPECIFICATION
3 SHEETS This drawing is a reproduction of
the Original on a reduced scale.
SHEETS 1,2 & 3

FIG.5

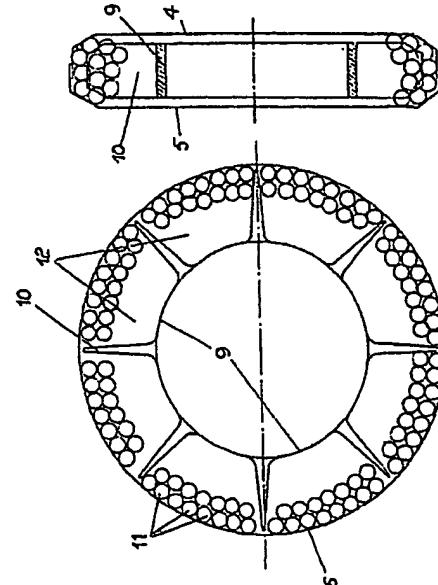
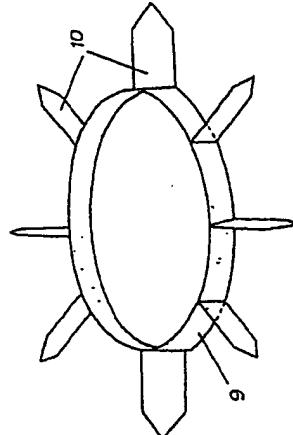


FIG.4

FIG.3

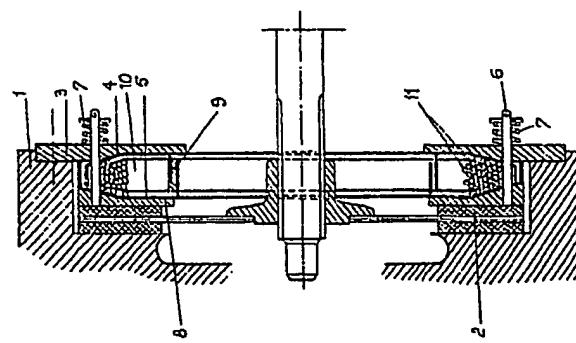


FIG.2

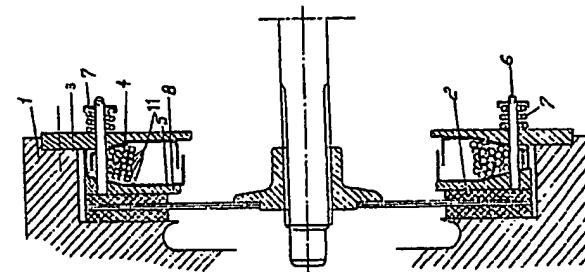


FIG.1